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Problems in the Future Control of Syphilis

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IT is well known that war is one of the greatest causes of increased syphilis rates, and World War II was no exception to this rule. However, never before has the decline of reported syphilis in most countries of Europe and America been so rapid as after World War II. The rapidity and magnitude of this decline can be attributed largely to rapid treatment with penicillin. With the older methods of prolonged therapy one of the greatest problems in controlling syphilis was to keep patients under regular treatment. Large numbers of patients diagnosed as having syphilis were started on treatment only to lapse from regular treatment, with the result that relapses of early infectious syphilis were common and many patients subsequently developed late manifestations of the disease.

Prior to the advent of penicillin it was estimated in the United States of America that less than 20 per cent of clinic patients diagnosed as having early syphilis received the recommended treatment at regular intervals for a period of one year. Under such conditions it was inevitable that our institutions continued to have a steady flow of late cases of syphilis, some of which were so far advanced that they constituted a drain on public funds for the rest of the patients' lives.

Now that all types of syphilis can in most cases be treated within a period of two or three weeks, case holding during treatment is no longer a major problem. To minimize the importance of this great advance in antisyphilitic therapy would indeed be unrealistic. On the other hand, it is equally unrealistic to expect that syphilis can be eliminated by treatment alone. Rapid treatment

Presented at the thirty-ninth annual meeting of the Canadian Public Health Association, held in Montreal, May 28-31, 1951, in conjunction with the annual meeting of la Société d'hygiène et de médecine préventive de la province de Québec.

has unquestionably lessened the magnitude of our problem but the control of syphilis continues to be a complex and difficult public health problem.

Before syphilis can be treated it must be found, and following treatment it is necessary to keep patients under observation for at least two years because of possible relapse or reinfection. It is much easier to keep patients under observation at monthly or bimonthly intervals than to keep them under treatment with regular weekly injections, but the follow up of treated patients will continue to provide treatment centers with a difficult task which is second only to that of case finding. In general it can be said that the lower the reservoir of infectious syphilis becomes the more difficult and expensive it is to find each new case of early infection. As long as a single case of early syphilis continues to be found, we can be certain that a reservoir of infectious syphilis still exists and we know that such a reservoir can rise rapidly in the absence of an alert and efficient public health program.

Case finding has always been more difficult in syphilis control than in the control of most other chronic infections because the signs and symptoms of early syphilis are frequently minimal and cause little distress. As is well known, syphilis can be very active for years before it causes sufficient symptoms to make infected individuals seek medical aid. Furthermore, no common infection has ever been brought under reasonable permanent control by treatment alone. Only those infections susceptible to attack by sanitary measures or by immunization have been reduced almost to the vanishing point. Neither of these measures, which have been so effective in controlling epidemics of acute infections and in preventing such diseases as malaria, are applicable to syphilis. In the control of syphilis prophylactic measures have not been very successful and, try as we may, it is improbable that we can appreciably alter the sexual habits of large numbers of people who are most likely to acquire the infection. As for immunization, the prospect of developing practical technics of immunizing individuals against syphilis is at present very poor.

Therefore, the first problem in the future control of syphilis, as in the past, will be to find individuals with infectious syphilis. This involves continued education of the public, intelligent interviewing of infected patients for contacts, and bringing contacts to examination. Advances in treatment in no way alter this problem except possibly to make it more difficult because of a tendency to become complacent and indifferent in view of the relative ease with which most cases of syphilis can be treated.

The fact is that scientific advances in any field of human endeavor have usually created new problems as well as helping to solve older ones. This statement is true of the effect of modern treatment on the problems of syphilis control. The rapidity and ease of treatment tend to make the public and the medical profession less interested in the disease. Some individuals are certain to be less cautious about their sexual contacts and, in my opinion, it is inevitable that the medical profession as a whole will increasingly lose its interest in syphilis, as indeed it has been doing throughout most of this century.

Up to the early years of this century syphilis was one of the major concerns of medicine and it attracted the best brains of the profession. During the past forty years, however, syphilis has increasingly been relegated to the outskirts

of medicine. Osler's famous epigram that to know syphilis is to know medicine is still quoted, but most physicians and even some medical schools have preferred to know medicine without paying much attention to syphilis. The reasons for the failure of most physicians in modern times to maintain great interest in syphilis are fairly obvious and they do not necessarily imply criticism of the profession. Syphilis is increasingly confined to individuals in the lowest socio-economic groups. Few physicians, including those who specialize in dermatology, see much syphilis among their paying patients and they have little occasion to study the disease as a whole unless they attend a syphilis clinic. The rapid advances in modern scientific medicine have so increased the number of subjects which must be taught in medical schools that little time can be devoted to any single disease, especially one that is now popularly believed to be easily treated and the incidence of which is rapidly declining. In spite of the fact that no competent teacher of medicine or of public health really believes that syphilis can be controlled by treatment alone, I think we must face the fact that interest in syphilis by the medical profession as a whole will in all probability continue to decline.

However, unless the reservoir of infectious syphilis is completely dried, past experience proves that war or other unsettled conditions favoring sexual promiscuity will certainly bring a flood of new infections which will require well-trained personnel to find and bring under treatment. Even under the most favorable conditions it will require alert and persistent efforts to keep the syphilis rate at its present level and, from a public health point of view, we obviously cannot afford to lose interest in the problem.

Nor, from a strictly medical point of view, have we as yet solved all of the therapeutic problems in syphilis. In spite of the ease with which most cases can now be treated, numerous exceptions to the rule continue to be found. Our understanding of the complex phenomena of syphilis is still very inadequate and it is absurd to expect the imminent surrender of an old and ancient enemy which frequently deceived the best medical minds in past centuries and which still puzzles us in many respects. Unfortunately it continues to be true that numerous cases of syphilis are being poorly treated or mistreated by physicians who have not had the time or inclination to keep up with the newer concepts of the disease. Thus it is obvious that we still need trained and experienced syphilologists for consultation purposes and we also need further research to increase our understanding of an exceptionally complex and chronic infection.

If, as I have indicated, we must anticipate an increasing loss of interest in syphilis by the medical profession as a whole, where are we to look for the trained personnel which will be needed if we are to maintain even the present control of syphilis? The answer to this question must be supplied by the public health departments. More than any other chronic infection, the medical management of syphilis as well as its prevention has come within the province of the public health authorities. In most sections of America the great bulk of syphilis is now treated at public expense and we have every reason to believe that this will be even more general in the future. It is not sufficient for health departments to provide financial aid in treating syphilis; they must also

provide the knowledge of how to diagnose and treat it. This means that they must make available expert consultation services as well as up-to-date manuals regarding diagnoses and treatment.

To the credit of the public health services in both the United States of America and Canada, this responsibility has been increasingly accepted during the past decade. If this were not true, we could not have accumulated our present knowledge about the effectiveness of penicillin or achieved the present rapid decline in syphilis rates. To my knowledge, the best information on the modern management of syphilis is now coming from sources either directly associated with public health services or sponsored by them. If further progress is to be made, we must continue to look to the public health departments for practically every aspect of syphilis control, including treatment and research.

As the incidence of syphilis declines, economies can and should be made, but for a long time to come public health authorities will probably have to provide programs for syphilis control from three main approaches: (1) case finding, which includes education of the public as well as contact tracing, (2) medical care, which includes education of the physicians who actually treat syphilis, and (3) scientific research. The expense of such services will be large but much less than in previous years, especially when the cost of caring for the casualties of late syphilis is considered. Obviously, the more these services can be concentrated the more effective and less costly they will be. One well staffed, busy and interested syphilis clinic is certain to do better work at less expense than several small clinics. In any case, all clinics and physicians treating syphilis at public expense should be in touch with their local health departments.

In closing these remarks, at the risk of making suggestions that may be impossible to implement in some areas and which may be superfluous for other areas, I would suggest that the control of syphilis in the immediate future be planned along the following lines:

1. All cases of syphilis treated at public expense should be referred as far as possible to clinics or physicians that are working in close cooperation with the public health services and the number of these clinics and physicians should be kept as small as possible with due consideration for the area and population involved.

2. Technics for the control of syphilis, apart from treatment, should be centered as much as possible around the special clinics and physicians treating the disease so that all patients can be properly interviewed, names of contacts be obtained and the patients be given some information about the disease and necessity for follow up.

3. Funds and personnel should be made as flexible as possible so that they can be used where they are needed most. In other words, the greatest expenditure of effort should be made where the reservoir of infectious syphilis is highest. In all probability areas with a relatively high incidence of syphilis will change from time to time and local epidemics may arise suddenly. These danger points should be discovered and attacked as promptly and as vigorously as possible.

4. Research in experimental syphilis and in human syphilis should be supported to achieve a better understanding of the disease.

Health and Welfare in Rural Ontario

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THE prime responsibility of a health officer is the prevention of disease and the promotion of health. This sounds like a simple, well-defined path for him to follow. However, the longer one considers it the more complex it becomes. Health means many different things to many different people. The longer that one is a health officer, the less certainty he has of the exact meaning of the word. Health cannot be defined precisely. Of the suggested definitions, the one that is most nearly satisfactory is to be found in the preamble to the constitution of the World Health Organization. In that document it is stated: "Health is not merely the absence of disease or infirmity but it is a state of complete physical, mental and social well being." Thus, health is a positive condition. One is not to be considered healthy just because the doctor cannot find anything wrong with him. Rather, he is healthy only if he, in addition to apparent physical and mental health, has also social health.

In years gone by it was relatively more simple to fulfil the obligations of a health officer. The problems were well defined and immediate. He was primarily concerned with communicable disease control and environmental sanitation. Diphtheria raged unchecked, typhoid and cholera were major problems, epidemics of smallpox still occurred. In short, he was so busy with immediate dangers that he had little time or opportunity to think of others that might be present. He could only wonder why so many babies died; he had no time to worry about the state of mental health of the community; care for the aged was a family responsibility; probably it never occurred to him that housing was any of his affair. Contrast that with the picture of today. By tremendous efforts in the past, most of the epidemic diseases have disappeared, years have been added to the life span, infant deaths have been markedly reduced. In spite of these gains your health department of today is an even busier organization than it was in the past. There has been a vast increase in expenditures for health but, even in this day of inflation, the dollar you spend for your health department is still worth a hundred cents.

A good part of the time of a health department is occupied in applying the tried and true methods of prevention handed down to us from the experience of those who have gone before. Many of these methods are so efficient that people tend to forget that a problem ever did exist. The control of diphtheria and smallpox is a good example. These diseases are now so completely controlled

An address delivered to the annual meeting of the Children's Aid Society of Halton County at Milton, Ontario, May 9, 1951.

that some people even question the need for vaccination and diphtheria toxoid. They forget that these plagues will again descend upon us unless we use to the full the potent weapons that are available to us. The same reasoning applies to many of our other activities, the constant search for new cases of tuberculosis, the never-ending careful watch over environmental sanitation, the steady educational approach which is a characteristic of all good health departments.

In comparatively recent years a new trend has appeared. The health department is becoming involved more and more in the welfare aspect of the community as contrasted to its former exclusively health responsibility. The control of tuberculosis serves as a good example. In Ontario, the province assumes the financial responsibility for the care of the patient while he is in sanatorium. Even though his own care will cost him nothing, it is very difficult to persuade a patient to enter sanatorium for a period of a year or more if he is uncertain how his wife and family will make out while he is absent. When he leaves sanatorium his after-care is a responsibility of his local municipality. All the benefit he has gained by his stay in sanatorium will be lost if he has to take on a job which is too much for his physical reserve. To the health department falls the often difficult task of persuading the municipality that he needs financial help, perhaps for a considerable period. This involves much time and effort. The aged are another group where welfare work is required. A couple become too old to look after themselves. The municipality turns to us for help. We all know that the facilities for their reception are completely inadequate. We explore every possibility, canvass all the institutions for vacancies, in many instances even provide some actual home care. We could cite many more examples where the health aspect of our work is overshadowed by the welfare activities. It is enough to state that we meet similar situations day after day.

We are not complaining, but we do submit that we are not the proper agency. Our personnel are highly trained to do valuable work in the field of public health. We are amateurs in the field of welfare and probably do this work inefficiently. By having to do much welfare work there is always the danger that we may neglect our fundamental responsibilities in the field of health. But suppose we say it is not our job? We have no choice in the matter since, at the present time in rural Ontario, there is no one to replace us. However, we think that the situation can be improved and we have some concrete suggestions to make.

In the large cities of Ontario well-organized municipal departments handle all aspects of welfare work. Their activities are co-ordinated with those of the health departments and there is no overlapping or duplication of effort. In the rural areas of Ontario, no such happy state of affairs exists. There is no welfare organization comparable to the department in the large city. Each municipality handles its own welfare program, usually with an untrained individual who may have many other duties. The responsibility for different types of welfare activities may be vested in many different people. The end result is not satisfactory. We think it can be vastly improved, to the ultimate benefit of all.

Look for a moment at the history of public health activities in the province of Ontario. Until 1944, the larger cities had well-organized health departments

staffed by full-time, specially qualified personnel. The residents of these cities received excellent service at comparatively low cost. In the smaller cities and in rural areas, health department activities were on a part-time basis. The service received was variable and, often, very scanty. In 1944, by an amendment to the Public Health Act, the authority for the formation of "health units" came into being. This allowed a number of municipalities to combine to share the cost of health services. By spreading the cost over a comparatively large number of people, the cost to the individual municipality was kept low. The response to this legislation is ample evidence that a need existed. In the short space of six years nearly 30 health units have been formed and they are serving over 75 per cent of the rural population of Ontario. All these units are staffed by full-time personnel, all with special training for their jobs. In this short period of six years, health units have become an integral and accepted service in rural Ontario. One would anticipate that there would be some reaction to the supposed loss of local autonomy. This has not been the case. Actually, the loss of local authority is more apparent than real. In Ontario, health unit personnel are not provincial civil servants. They are employees of local governmental bodies under the supervision of a locally appointed board of health. This is an important difference from most other provinces where, in most cases, the health units are administered directly by the provinces. In Ontario, the province limits its participation to its financial contribution and an over-all supervision to see that the basic minimum program is carried out. Beyond this basic program, each health unit may develop in the direction best suited to local need.

The growth of these health units in Ontario has a real significance for those interested in welfare work since the future may hold a similar pattern of development for their field of endeavor. Health units came into being because of a demand from the people for improved public health services in rural areas. This improved service was possible only if enough people banded together to share the cost. The usual combination of municipalities was on the basis of a county. The province, to ensure the development of these services, subsidized the cost to the extent of 50 per cent in rural areas. There was no loss of local autonomy. Now, most of the people in rural Ontario have public health services equal to those in the large centres.

With few exceptions, welfare services in rural Ontario are now at the level of public health services prior to the formation of health units. A variety of agencies, some official, others voluntary, most of them with untrained personnel, administer bits and pieces of the welfare program. There is no central co-ordination, no attempt to serve the family as a unit; rather, each problem is dealt with as it arises. One shining exception to this confused state of affairs is the activities of the Children's Aid Societies. In this county we have a good example of how two agencies, the one health, the other welfare, can co-ordinate their programs to avoid duplication of service and to render to the community the maximum benefit. We would pay personal tribute to your superintendent and his staff for the excellent job they are doing. Neither of us could do without the other. So often we encounter child welfare problems that can be solved readily and adequately by him. It is not a one-way service; often

we are able to help him with matters of a medical or nursing nature. But his organization is like our own, it is on a county-wide basis and is staffed by full-time, specially trained personnel. This happy state does not obtain in many other welfare activities. Too often, when we are faced with a welfare problem, we have great difficulty in discovering just whose responsibility it is to correct it. Many times we are unable to satisfactorily terminate the undesirable situation.

What is the solution? The remedy is apparently so simple that it is amazing that it has not already been done. The necessary legislation already exists. The Welfare Units Act of 1948 authorized the formation of country or district "welfare units" and the provincial government offered to underwrite such services to the amount of 50 per cent of the total cost. Not all of those in authority are in favor of the formation of such units. However, many eminent people in the welfare field in this province feel that such units are the only practical solution for our present confused state. Their formation would be a great forward step and would provide much better welfare services to the people at a relatively low cost. Where would the necessary staff be found? Schools of Social Work already exist in our major universities and students are being trained to do just such work. The School of Social Work at the University of Toronto has shown considerable interest in Halton county. In this county are two welfare projects of which we may well be proud, the low-cost pensioners' housing in Burlington and the new Home for the Aged now under construction at Milton. These have been of sufficient interest for the students to visit us. Halton county has a reputation for leadership far out of proportion to its population. The time has arrived for this county to show the way again. The establishment of a county welfare unit would be a demonstration for others to follow.

Naturally, you might wonder what would happen your own society if it became a part of a larger welfare unit. Again, a parallel with the developments in public health provides the answer. Probably one of the most successful health efforts on a voluntary basis has been made by the Canadian Tuberculosis Association together with its various provincial and local branches. Largely by its efforts, Canada now stands in the forefront in the world today in the control of tuberculosis. Long before governments were ready to act, groups of citizens were alive to the need and assumed the responsibility. As their efforts began to bring results, governments began to realize their responsibilities and assumed more and more of the cost of the control of the disease. Now, the various tuberculosis associations have swung away from the treatment field and are concentrating more and more on the preventive aspects. This is the perfect success story of a voluntary agency and shows the true function of such an organization. The prime function of a voluntary agency is to demonstrate the need to the government and to the people to the point where the people, through their governments, assume the responsibility for the correction of that need.

There is a parallel between the activities of the Canadian Tuberculosis Association in health and your own society in welfare. The type of child welfare found in all provinces except Alberta and Quebec is uniquely Canadian. Beginning in Ontario in 1893, licensed children's aid societies, under voluntary

auspices, have been authorized to undertake wardship of neglected or dependent children, provide institutional or foster home care for these children, arrange for adoption, carry on child protection work, and perform certain other related functions. They receive public aid for this work, in Ontario to the extent of 85 per cent of their total expenditures, in the form of municipal or provincial per diem maintenance payments for children legally under their care. In Ontario and in Nova Scotia small grants are made toward administrative costs. However, there are already certain straws in the wind which may indicate the possible future. Saskatchewan has recently changed to a provincially centred plan and serious questions are being raised in certain other provinces about the validity of private boards directing a program financed so largely by public funds.

This formation of welfare units similar in nature to health units may easily become a fact in rural Ontario in the not too distant future. The prospect need cause you no regrets; rather, it should bring to you a sense of real accomplishment. It has already been stressed that the most valuable duty of a voluntary agency is to take hold of an unsolved problem and to solve it to the point at which the government realizes its responsibility and takes it over. Your society has accomplished this in an admirable manner in the field of child welfare. You have shown that the problem can be solved. Now, the official agency should take the responsibility. You alone, of the welfare agencies in the rural areas, have shown how a co-ordinated effort by specially trained full-time personnel, can attack the problems of welfare. Your efforts have demonstrated that similar attacks can be made on other welfare problems in rural areas. The only logical approach to this solution is by units serving large number of persons and staffed by full-time, specially trained workers. In the end, the cost would not be much greater than it is at present and the results would be vastly better. The legislation already exists to make this possible. All that is now needed is enough public demand for its implementation.

All of us, whether our primary interest is health or welfare, have the same basic objectives, to make our communities, our nation and the world, a little better, a little safer, and a little happier for all our people. We, who are health workers, are proud to be associated with you who labor for the same ends in the field of welfare.

Lepromatous Leprosy Affecting a Recent Canadian Immigrant

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Medical Officer of Health
Windsor, Ontario

AN unmarried, male, Maltese immigrant, J.D., 25 years of age, reported for treatment at the Venereal Disease Clinic of the Windsor Board of Health on March 19, 1951. The man had arrived in Canada from Malta, via New York and Fort Erie, on May 20, 1950. He had lived and worked in Toronto for several months, then came to Windsor for an open-air job with the New York Central Railway. A fellow-roomer noticed the young man treating himself for an unhealing wrist ulcer and telephoned the Board of Health. He was advised by one of our nurses to escort the patient to a private physician. The latter examined him and took a blood test. On receipt of the report showing presumptive and standard Kahn positive, Wassermann positive, and quantitative Kahn 1:64, he referred the patient to our clinic for treatment.

The ulcer was examined by Dr. H. H. Lees, the clinic physician, and by myself, and we were both somewhat skeptical of the diagnosis. The epidemiological history taken by the clinic nurse was negative as to any source of luetic infection. There was no time that afternoon for a complete physical examination but a darkfield test was done and later reported by the laboratory as negative. Meantime, the patient had been given 300,000 units of penicillin intramuscularly and had been advised to report the following morning for continuation of treatment. It had already become evident to Dr. Lees and me that a thorough examination would be required and that other dermatoses, such as tuberculosis, leprosy, and tropical ulcer, would have to be considered as well as syphilis.

On his return the following morning for the second injection, I had the opportunity of making a complete physical examination and, having seen a number of cases of leprosy in India, was quickly convinced that we were dealing with an early case of lepromatous leprosy. Smears of the nasal mucous membrane and of the ulcer were made, stained by the Ziehl-Neelsen method, and revealed numerous acid-fast bacilli which were readily identified as *Mycobacterium leprae*.

When the patient came in on Wednesday morning for his third penicillin injection, he was taken to the Fred Adams' Hospital (a Board of Health isolation unit), ostensibly for treatment of syphilis. The Provincial and Federal Departments of Health were notified by telephone that day and were requested to keep the information from the public until we had completed our examination of all known contacts.

Presented at the second annual meeting of the Ontario Public Health Association, held in the Royal York Hotel, Toronto, October 1 and 2, 1951.

By Saturday of the same week, all rooming-house contacts and Maltese friends of the patient had been examined. The physical examinations, blood tests (for syphilis), and smear tests (for leprosy) proved to be negative in all cases. While this was going on, it became evident to some of the Maltese that our tests were rather unusual for syphilis and the patient's room-mate volunteered the information to the vigilant Canadian fellow-roomer that they knew leprosy was suspected and that J.D. had relatives in Malta who had that disease.

Our contact investigations being complete, there was no longer any reason for secrecy but, at the same time, some danger that the public might get wind of the investigation and become unnecessarily alarmed. The patient was informed of the diagnosis and admitted that his "generation" (his term for relatives but not the immediate family), had suffered from leprosy. On Saturday afternoon, I had a long talk with Mr. J. Kent, health reporter of the Windsor Daily Star. His natural reaction was to play up the story. On second consideration, however, he decided against giving it the headlines. The report which went out over the Canadian Press on the 26th of March is such an excellent one and so clearly depicts the modern trend in public health thinking about leprosy that I am quoting it verbatim:

> The first known case of Hansen's disease (leprosy) in Windsor was uncovered here last week by health authorities.
>
> The victim, a 25-year-old unmarried new Canadian, came to Canada in May, 1950.
>
> The man has been isolated and preliminary treatment begun. All persons who have had contact with the man in Windsor have been checked and show no symptoms of the disease.
>
> Health authorities in Windsor and in medical journals point out that Hansen's disease is the least communicable of all the communicable diseases. Repeated efforts to culture the bacillus have failed.
>
> 'As a result, locating a case in Windsor is a medical curiosity, not a threat to the community,' Dr. John Howie, medical officer of health, said.
>
> The immigrant came to Toronto via New York. He had apparently passed all medical examinations in Malta and any required en route to this country.
>
> In Toronto he worked at numerous jobs until he came to Windsor in October and went to work for a railroad. This job ended Dec. 29 and the man has not worked since.
>
> Research into the history of the case brought out the information two cousins and an aunt in Europe have Hansen's disease.

A more detailed article appeared in the Windsor Daily Star, the opportunity being taken by the reporter to do some educational work on the subject of Hansen's disease and modern methods in its treatment and control.

Restrained and informed publicity of that nature is quite desirable. When leprosy is encountered in a community, and particularly in areas where it is uncommon, any publicity given the case should be in a matter-of-fact way, avoiding dramatization. In such circumstances it is worth while, as many people still think of leprosy in biblical terms of some 2,000 years ago. They require to be informed that leprosy is not a scourge, but just another disease, communicable but avoidable and with good prospects of arrest or cure if treated early, adequately and regularly.

On Tuesday, March 27th, having prevailed upon Federal health authorities to postpone the patient's transfer to a leprosarium, I had the opportunity of presenting the case in person before the Essex County Medical Society. It aroused much interest, being the first case of leprosy that many of the members had seen and the diagnosis being confirmed by an excellent series of slides displayed by the provincial bacteriologists. The differential diagnosis, classification, treatment and prognosis also proved to be of interest to the members.

Since Canadian medical literature is almost devoid of reference to leprosy, a discussion of the disease, with sidelights from this particular case, should be of interest to fellow-workers in the Canadian public health field.

It must be kept in mind that, with the increasing ease and speed of world-wide transportation, diseases which we commonly associate with the tropics may be introduced to our country at almost any time. Those of us who are public health physicians should be even more awake to that possibility than our confrères in private practice. This Windsor leprosy case points that fact up very well and is a highly interesting one in other ways.

Classification:

The classification of leprosy was changed at the International Congress of Leprosy held at Havana, Cuba, in April, 1948.[1] Three types were defined:

Lepromatous (malignant, or gravis) : symbol, L.
Tuberculoid (benign, or mitis) : symbol, T.
Indeterminate (undifferentiated) : symbol, I.

The characteristics of these 3 classes of leprosy are as follows:

The Lepromatous Type:

Minimal resistance to the existence, multiplication, and dissemination of the bacilli; constant presence of large numbers of bacilli in the lesions, with a distinctive tendency to form globi; characteristic clinic manifestations in the skin, the mucous membranes (especially of the upper respiratory tract and eye), and/or the peripheral nerves, together with involvement of other organs; regular failure to react to lepromin; pathognomonic granulomatous structure of the lesions; marked stability of type and a tendency to progression. These are the "infectious" or "open" cases.

The Tuberculoid Type:

High resistance to the existence, multiplication, and dissemination of the bacilli; as a rule, bacteriologically negative or, if positive, with few bacilli except in reactional states; characteristic clinical manifestations, mainly in the skin and nerves, tending to be limited in extent and varying in degree with the reactivity of the tissue; reactivity to lepromin in a very high percentage of cases; nearly always a tuberculoid granulomatous structure in active lesion; marked stability, and a strong tendency to spontaneous regression in the absence of repeated reactions. These cases are usually "non-infectious" or "closed".

The Indeterminate Group:

Variable with respect to resistance; clinical manifestations chiefly in the skin and nerves; the skin lesions usually flat macules, either hypochromic,

erythemato-hypochromic or erythematous; bacteriologically negative or moderately positive; the lesions histologically of simple inflammatory nature; stability much less than in either of the "polar" types. These cases are usually "non-infectious".

Differential Diagnosis:

This could take many pages but there are three characteristic findings which will definitely establish a leprosy diagnosis:

1. Finding of acid-fast bacilli in dermal or other lesions.
2. Thickening and tenderness of nerves.
3. Impairment of skin sensation.

Acid-fast bacilli may be found in skin tuberculosis, but the bacilli are few and difficult to find in tuberculous skin lesions whereas they are numerous and characteristic in lepromatous leprosy. Another distinguishing feature is that the tubercle bacillus can be cultivated without difficulty, but no one has yet succeeded in cultivating the leprosy bacillus. It should be kept in mind that acid-fast saprophytes are occasionally found in nasal smears, so that it is necessary to use a proper puncture, tattooing or other satisfactory method of obtaining specimens for staining.

The Windsor patient was a typical case of lepromatous leprosy, with all characteristic lesions being present. In addition to the ulcer on the dorsum of the left wrist, the skin manifestations included a florid appearance of the forehead, nose, cheeks and chin (perhaps very early stages of the leonine facies); thinning of the eyebrows; granulomatous infiltration of the nasal septum; small nodules on both auricles; generalized rash over the back; a large nodule, raised one-half inch above the skin surface, on the dorsum of the right elbow; a small nodule palpable on the right ulnar nerve; and pigmented areas on both legs.

It is interesting to note that most of the lesions were on exposed surfaces, the face and the extensor surface of the elbow, wrist and legs. This typical distribution has led some clinicians to surmise that the lesions result from direct contact.

The central nervous system revealed thickening of ulnar and auricular nerves; heightened reflexes; areas of hypo-esthesia (and, in some spots, anesthesia) of the forehead, forearms and lower limbs. Dissociation (touch present, but pain and temperature senses impaired) was also noted on the lower limbs.

The cardiovascular, respiratory and locomotor systems were essentially normal and x-rays revealed no involvement of bones of hands or feet.

The blood showed a secondary anaemia and repeated blood tests gave a positive Wassermann, positive Kahn and quantitative Kahn 1:64.

The bacteriological examination revealed leprosy bacilli in large numbers in the nose, the various nodules, the wrist ulcer and in other skin areas. On March 21st, possibly due to a double dose of penicillin (600,000 units), the patient's temperature overnight rose from normal to 104 degrees (the "leprous reaction"). Citrated blood specimens were examined the following morning and showed leucocytes with a few acid-fast bacilli.

Epidemiological Record:

In view of the nasal findings, and a history of nosebleeds for several years, the following extract from the patient's history recorded by the clinic nurse on the day of his admission as a "syphilitic" case is very interesting:

May 20, 1950 —"Arrived at hostel in Ajax, Ontario; stayed 11 days; no work.

June 1 - Sept. 17/50—"In Toronto, at two rooming houses (addresses noted). While in Toronto, worked at ....., making bricks for a few days. Could not do work due to dust. Worked at ....., carrying bags of flour for a few days. Work too heavy; unable to continue. Worked at ....., a textile plant, for two months. Very dusty work; had to leave. Worked at ....., a paint plant, for 12 days. Had to leave due to smell of paint. Could not breathe."

It will be noted that this history was written with syphilis and not leprosy in mind, and I think it calls for a tribute to the training of public health nurses in epidemiology. In the patient's job difficulties due to nasal troubles, Hansen's bacilli were doing their best to attract attention and call for a diagnosis.

Infectivity:

It is not likely that any of the Canadian contacts of J.D. will develop leprosy. Two of them, however, will have to be very carefully watched, one being his bedmate during the time the patient was in Windsor, and the other the young son of the housekeeper. The incubation period is very protracted and has been estimated at periods of from two to ten years. It has been determined by a study of the life experience of 1,520 individuals living in the province of Cebu, P.I.,[2] that there is a clear relationship between age at time of exposure and the risk of developing lepromatous leprosy. It is highest for those exposed before the age of 5 years, decreasing progressively as the age at time of exposure increases. This is true for both males and females. The average interval between exposure and development of lepromatous leprosy was 10.5 years for those exposed under 10 years of age but only 6.0 years for those exposed after the age of 10 years.

All household contacts of a case of leprosy should be examined by a physician familiar with the disease. Associates of "open" cases, such as the one we are reporting, should be re-examined every second year up to the age of thirty years. It is generally agreed that such contacts should not be under restrictions of any kind other than that of recall for the periodic re-examinations.

Treatment:

Although I do not personally believe that our patient, J.D., had syphilis, and false positives are quite common in leprosy, daily intramuscular injections of 300,000 units of penicillin were given to him for two weeks. It is interesting to note that the patient's general condition and the lesions, particularly the ulcer, improved quite markedly during that period. Penicillin has not proved of

any specific value in leprosy and the improvement was probably due to better living conditions, iron therapy and diet in the hospital and to the effect of penicillin on secondary invaders.

About ten days after admission, the patient was given promizole, one of the sulfones. Following the original use of sulfones in leprosy by Faget et al. in 1941,[3] various modifications of this chemotherapeutic agent have been extensively used in the treatment of leprosy and have proved of great value, although not a specific. Some of the early cases which were thought to have been arrested have shown relapses. Erickson[4] notes that "over a 5-year period in which the follow-up varied from 6 months to 5 years after arrest of lepromatous leprosy on sulfone therapy, relapse rates of 45 per cent for patients not continued on sulfones and 4.5 per cent for those continued on treatment were experienced." His study was on a limited number of cases and merely indicates a trend and suggests that the incidence of relapse can be markedly lowered if sulfone treatment is continued after arrest of the disease. The fact that relapses have occurred, as he mentions, does not brand the sulfones as failures in the therapy of leprosy. "In fact, it detracts very little, if any, from the reported value of these drugs in this relentless disease. Their ability to produce regression of leprous lesions and to keep the ravages of the disease in check cannot be discounted."

At Tracadie, New Brunswick, the leprosarium to which our patient was transferred on April 5th, diasone is being used in treatment. This is another of the sulfone compounds which has proved very effective in arresting the disease, as noted by Muir[5] and others.

All clinicians have called attention to the need of iron therapy when administering sulfones.

Public Health Trends in Leprosy Control:

Whenever opportunity occurs, public health authorities and medical societies should bring to the attention of practising physicians the cardinal points in diagnosis, treatment and control of leprosy. It has been noted by Doull[6] that the principal points are to make a diagnosis early and to prevent intimate association of lepromatous patients with young children. Administratively, he considers cases should be handled by local health units in much the same manner as tuberculosis, without newspaper or other publicity. In the Windsor case, I think we have shown that the newspaper may be used for the education of the public and to accelerate the break from tradition and the age-old cry of "unclean, unclean" with which individuals suffering from this disease have had to cope for so many centuries.

The attitude to leprosy has changed very materially in the past two decades, Major-General Sir Leonard Rogers and associates having had a great deal to do with this development. The advent of sulfones in treatment is augmenting the movement toward a more humane attitude to victims of this disease. In fact, there is a growing tendency to refer to leprosy as Hansen's disease and make a complete break with the past. If the disease is of the tuberculoid or indeterminate types, and bacteriologically negative, it is now felt in the United States and in endemic areas that there is no occasion for hospitalization or isolation except where the former may be required for treatment of ulcers or contractures.

Rogers[7] traced the source of infection of his patients and found that 94.7 per cent of cases were due to lepromatous leprosy, only 5.3 per cent being traceable to the other two types. "The whole weight of modern competent opinion is that such cases [i.e. 80 per cent of all; Roger] are no danger to the public and that their segregation only encourages false and misleading fear" (British Empire Leper Relief Association).

Lepromatous leprosy cases should be given isolation care and the best available treatment as soon as possible. It is generally considered that patients with L-Leprosy should remain in isolation for at least two years without the appearance of new symptoms before discharge is contemplated. When arrested, the lepromatous case should receive the same consideration as the other two types. In all cases, re-examination is advisable annually.

In Canada, there is no specific legislation in the provinces relating to leprosy. It is just treated as one of the communicable diseases which are reportable, and without placarding or quarantine of contacts. Concurrent and terminal disinfection are required and the patient must be isolated until clinical recovery. No special provincial legislation is required because of the fact that "An Act respecting Leprosy" has been passed by the Dominion Government. This Federal Act requires that all cases of leprosy shall be admitted to one of the two leprosaria, one of which is on the Pacific Coast at William Head, British Columbia, and the other on the Atlantic Coast, at Tracadie, New Brunswick. Some of the provisions of this act are out-dated and the wording might be modified, but, on the whole, it is a reasonable document and provides that, when the disease is arrested, the cases may be discharged.

In conclusion, it may be noted that leprosy has been known for over 3,500 years, but more has been accomplished in our generation to raise hopes that it will soon lose its significance as a world scourge than in any other era of history. Some more economical form of the sulfones, or some other method of therapy, would appear to be a necessity to ensure its use in lands where living standards are low. Continued research is needed. Since it was work on tuberculosis which led to the use of sulfones in leprosy, it may well be, as Muir suggests, that workers in the leprosy field may develop some type of treatment which will be of benefit in tuberculosis. Be that as it may, there is no doubt about the fact that a new day has dawned in the public reaction to leprosy and in therapy and control of leprosy.

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A School Dental Program

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WHETHER it be due to its importance in preventive medicine or in diagnosis, or its modern methods of treatment, dental hygiene has become a fundamental and undeniable necessity in the advancement of public health. We cannot ignore any longer the importance of dental infections in the diagnosis of organic diseases which are the lot of suffering humanity. The consequences of dental decay and dental infection are so disastrous that the federal, provincial and municipal authorities have recognized the importance of fighting this enemy in the field of public health. Today, in every large community, dental services are organized and have become an integral part of the public health organization.

School dental programs have been initiated throughout the country. I believe that the program in Montreal can be favourably compared with those in other communities. I shall try to give you an idea of what is done here in the way of dental public health, our school program, how our clinics work, and our hopes for the future.

Before 1915, the medical officers of the health department, during their occasional visits to the classrooms, examined the children in order to check the normal eruption of the permanent teeth. This inspection was more or less cursory and the results were rather negative.

In the spring of 1915, the first dental officer was appointed to the service. It was a beginning. In those years there was no vitamin therapy, although we knew that cod liver oil was good for the teeth and bone structure; "vitamin A" was introduced in 1914, under the name of "fat soluble A". Aside from visiting school rooms and examining the children's teeth, using tongue depressors, the dental officer possibly limited his check-up to the permanent front teeth and six-year molars. His lecture subjects were probably based on the necessity of good teeth for good health and the desirability of brushing the teeth three times a day.

Thirteen years later, in 1928, the Department of Health was reorganized and three more dentists were appointed. At last, a real dental education was brought to the school rooms. Children were taught how to take care of their teeth, how to eat and what to eat.

But probably 97 per cent of the school children were suffering from tooth

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decay, and the financial depression was on. For the less fortunate, who were many, something had to be done. With the cooperation of the school authorities, it was decided that as many as possible of the teeth that could not be saved would be extracted. The need was so great, and the conditions under which the work had to be done were so bad, that the city administrators finally realized the great necessity for free municipal dental clinics. In 1932 the first two dental clinics started operating.

During 1935-36 three more dental clinics were opened. More and more, dental hygiene was becoming an important part of the Department of Health. In 1939, the Division of Child Hygiene created a new section, the Section of Dental Hygiene, with a chief dental officer, Dr. R. R. Lalonde (who recently retired). Six full-time dentists, six nurses, and four dental assistants were necessary for the functioning of the six dental clinics then operating.

In 1940, during this rapid development of the dental section, in which our present director, Dr. Ad. Groulx, was deeply interested, an orthodontic clinic was opened in the dental faculty of the University of Montreal. Dr. Paul Geoffrion, professor and assistant dean, was appointed to this new municipal service. This clinic is a unique feature of Montreal's dental program. In a study on child health services by the American Academy of Pediatrics, it was pointed out by John T. Fulton that orthodontics comprised only 0.8 per cent of the total number of dental services provided in children's dental clinics.

Gradually, other clinics were added. With the cooperation of the Protestant School Board, a dental clinic was opened in Berthelet school. Arrangements have been made to open another clinic in Victoria school next September.

Since 1943, with the cooperation of the Catholic and Protestant school authorities and the Dental Health League of the Province of Quebec, a joint campaign of proper nutrition and oral health has been under way and is bringing good results. During this campaign, teeth are inspected, educational gatherings are held in each school, and talks are given on proper nutrition and dental health.

Thus our school dental program includes three main activities: dental inspection of school children, dental health education, and municipal dental clinics.

Dental Inspection of School Children

Through the dental inspection of school children, we are in direct contact with a great number of children. Last year, out of a possible 141,450 school children, 90,000 were examined. This work is done by the full-time dentists, at school, generally in the classroom. Short talks on oral hygiene emphasize the importance of clean and healthy teeth and the manner in which they should be brushed.

Children in need of dental treatment are given notice concerning the condition of their mouth, in order that the parents may take steps to have the defects remedied. The parents are urged to take their children to a private dentist if at all possible; only children from families with substandard incomes are accepted for clinic treatment.

Once again, let me emphasize the importance of this dental inspection which brings the child and the dentist together, often for the first time, in familiar surroundings, much more agreeable than in a dentist's office. It also establishes a contact with the teachers and the school authorities. On more than one occasion their cooperation has been of the utmost importance.

Since 1945, a survey of first-year students has been carried on at the University of Montreal. In the last five years we have examined 3,423 students. Of this number, 1,722 or 50.4 per cent were needing treatment, while 1,701 were considered normal. These results are encouraging when we consider that we found 3,714 defective teeth, or slightly more than one carious tooth per student. This survey will be continued and I believe that, before long, all our educational institutions will have this dental inspection.

Dental Health Education

The second point in our program is dental health education. A joint campaign on nutrition and dental health has been going on since 1943, with the cooperation of the school authorities and the dental health commission of the College of Dental Surgeons of the Province of Quebec. During this campaign, talks are given by a medical officer on proper nourishment, and the necessity of dental health is explained by the dentist who has completed the school inspection. These meetings are for both teachers and pupils and are illustrated by educational films. The value of these campaigns in dental education and prevention cannot be overestimated. From January 1943 to June 1945, 95,490 pupils attended the 194 meetings that were held.

Municipal Dental Clinics

The fourteen municipal clinics operating throughout the city are proof of the effectiveness of Montreal's school dental program. These clinics are well attended and we try to give our young Canadians the best dental service possible. All ordinary restorative dentistry is performed, as well as prophylaxis and extractions. Last year 25,689 school and pre-school children were given a complete oral inspection in our clinics. Of this number, 23,023 were treated; 2,666 were found normal or refused treatment; 28,661 teeth were extracted, 5,855 or 20.4 per cent of these being permanent teeth and 22,806 or 79.6 per cent being deciduous teeth; 9,671 teeth were filled; and 4,664 children had the benefit of prophylaxis.

Our orthodontic clinic was established in 1940 and is located in the dental faculty of the University of Montreal. Dr. Paul Geoffrion, a well-known orthodontist, is in charge and has the assistance of a nurse, a specialized technician, and a typist-stenographer who takes charge of all the office work. Since the clinic began operations, 540 children have been successfully treated. This municipal service has been of inestimable value to many young Montrealers who otherwise would have started out in life badly handicapped.

Seventeen dentists, nine of whom are employed full-time and eight part-time, are required to provide the school dental program. They are assisted by eleven nurses. Most of our clinics are operated by two dentists (one part-time and one

full-time), assisted by a nurse. The majority of the clinics operate for six hours a day, five days a week. The morning hours are reserved for extraction, dental inspection, diagnosis, and any emergency treatment. Appointments are given to those who need fillings. These are the working hours of the part-time dentist. He is rarely, and only in certain circumstances, called upon to do any school dental inspection, this being generally part of the work of the full-time dentist.

Here again, at the clinic, dental health principles are explained to the mothers, who usually accompany children whose teeth are to be extracted. This teaching is done in part by the dental nurse while the child is getting acquainted with the dentist. The afternoons are reserved for different phases of restorative dentistry such as silicates, copper cement and amalgam fillings, prophylactic and emergency treatments. These afternoon hours are the time given to clinical work by the full-time dentist; his mornings are reserved for school inspection.

The duties of the dental assistant or nurse are numerous. Aside from assisting the dentist, she must make appointments, answer telephone calls, sterilize instruments, tabulate reports and do all the routine office work. Most important of all, she must give dental health instruction to the mother and the child in the waiting room.

Although seventeen dentists and eleven nurses are available to carry on this school dental program, I do not believe that our health authorities will stop here. Plans are under way for the addition of two or three new clinics and our present program will be completed when six new dental clinics are operating throughout the city. This will require new additions to the staff. At least two more full-time dentists will be necessary, together with six more serving part-time, and eight nurses.

We cannot deny the need for these health services. True, we must not forget the educational point of view, but we must realize that, with heavy taxation and the high cost of living, many families cannot afford dental care for their children. If these clinics did not exist, all this oral health education would be to no avail, or at least with no practical and immediate results. As it is, we are preparing today the well-informed patient for the dentist of to-morrow. Better still, we are contributing to the welfare and happiness of our fellow citizens through our program of dental health.

A Review of Public Health Regulations Governing Institutional Dishwashing

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AS A COROLLARY to a recent investigation into institutional dishwashing, a survey of modern public health regulations pertaining to this subject was made. Letters with simple questionnaires were sent to seventy health authorities throughout the world. The returns from these questionnaires have totalled 80 per cent for Canada, 75 per cent for the United States, and 75 per cent for the group marked "others." This group included Hawaii, Puerto Rico, Alaska, England, Sweden, Peru, Brazil, Cuba, Norway, Switzerland, the District of Columbia, and the World Health Organization of the United Nations.

In each group, only one health authority was questioned. An attempt was made to select a city which was prominently known in that particular district, but the capital of the district was not always chosen. Size was the main consideration in selection; whereas, in the foreign countries, the capitals were polled in order to obtain a more complete reply directly from the ministers of health of the countries involved.

The following questions comprised the questionnaire:

1. Are the regulations governing dishwashing as used in public eating establishments of local or of federal origin?
2. Is any specific detergent recommended or required?
3. Is the health of the personnel involved in the dishwashing taken into consideration? If so, in what manner is it considered?
4. What are the minimum requirements for equipment?
5. What is the maximum plate count allowable to determine the degree of satisfactoriness of the method under investigation?
6. What are the times and temperatures of the wash and rinse cycles?

Each question is considered separately and an analysis is made on a percentage basis. This percentage is based on the number replying to the questionnaire, and not on the number of questionnaires sent. Where necessary, comments on the question are made and examples of the regulations are cited to demonstrate the manner in which the particular problem is approached. The findings of the questionnaire are summarized in the table.

1. *Are the regulations governing dishwashing as used in public eating establishments of local or federal origin?*

Canada:	12.5% local, 50% federal, 37.5% not specified
United States:	22.2% local, 69.5% federal, 8.3% not specified
Others:	44.4% local, 44.4% federal, 11.2% not specified

SUMMARY OF QUESTIONNAIRE FINDINGS

State	*Wash Cycle*		*Rinse Cycle*		*Personnel Health Check-up*	*Equipt. Standards*	*Plate Count*	*Type Law*	*Detg. Spec.*
	Time Min.	*Temp. °F.*	*Time Min.*	*Temp. °F.*					
ALA.	N.S.	110-120	1	170	N.S.	YES	N.S.	S.	D.
ARK.	N.S.	N.S.	?	170	N.S.	YES	N.S.	S.	D.
ARIZ.	N.S.	110-120	2	170	YES	N.S.	100	L.	D.
CAL.	N.S.	N.S.	½	180	N.S.	YES	N.S.	S.	D.
COL.	No reply received to questionnaire								
CONN.	No reply received to questionnaire								
DEL.	½	130	½	170	YES	YES	N.S.	L.	D.
D.C.	General regulations of local origin								
FLA.	N.S.	N.S.	2	170	N.S.	YES	100	S.	D.
GA.	N.S.	140	N.S.	180-190	YES	YES	100	S.	D.
IDA.	N.S.	110-120	2	170	N.S.	YES	100	S.	D.
ILL.	N.S.	120-140	2	170	N.S.	YES	100	L.	D.
IND.	N.S.	120-140	⅙	170	YES	YES	100	L.	D.
IOWA	N.S.	N.S.	2	170	N.S.	N.S.	100	S.	D.
KAN.	No reply received to questionnaire								
KY.	N.S.	140	2	170	N.S.	YES	N.S.	S.	D.
LA.	No reply received to questionnaire								
ME.	No reply received to questionnaire								
MD.	N.S.	N.S.	1	180	NO	YES	100	S.	D.
MASS.	3	120	2	170	YES	YES	100	S.	D.
MICH.	N.S.	N.S.	N.S.	N.S.	YES	YES	N.S.	N.S.	N.S.
MINN.	N.S.	110-120	2	170	N.S.	YES	100	S.	D.
MISS.	¼	110-140	¼	170	YES	YES	N.S.	S.	D.
MO.	N.S.	110-120	2	170	N.S.	YES	N.S.	L.	D.
MONT.	No reply received to questionnaire								
NEB.	General regulations of state origin								
NEV.	No reply received to questionnaire								
N.J.	State law specifies only health check on personnel.								
N.H.	⅔	110-120	2	170	N.S.	YES	100	N.S.	D.
N.M.	N.S.	120	2-3	170-180	N.S.	N.S.	100	L.	D.

SUMMARY OF QUESTIONNAIRE FINDINGS—*Continued*

State	Wash Cycle		Rinse Cycle		Personnel Health Check-up	Equipt. Standards	Plate Count	Type Law	Detg. Spec.
	Time Min.	Temp. °F.	Time Min.	Temp. °F.					
N.Y.	N.S.	140	⅛	180	YES	YES	N.S.	S.	D.
N.C.	No reply received to questionnaire								
N.D.	N.S.	110-120	2	170	N.S.	YES	100	S.	D.
OHIO	N.S.	140	½	170	N.S.	N.S.	100	L.	D.
OKLA.	No reply received to questionnaire								
ORE.	N.S.	140-160	⅛	170	YES	YES	100	S.	D.
PA.	No reply received to questionnaire								
R.I.	N.S.	120-140	¼	180	YES	YES	100	S.	D.
S.C.	General regulations of state origin.								
S.D.	N.S.	110-120	2	170	N.S.	YES	100	L.	D.
TENN.	N.S.	110-120	2	170	N.S.	YES	100	S.	D.
TEX.	N.S.	N.S.	3	170	YES	YES	N.S.	L.	D.
UTAH	N.S.	110-120	2	170	N.S.	YES	N.S.	S.	D.
VER.	N.S.	130-140	2	170	YES	YES	100	S.	D.
VA.	½	140	¼	170	N.S.	YES	100	S.	D.
WASH.	No reply received to questionnaire								
W. VA.	No reply received to questionnaire								
WIS.	N.S.	N.S.	N.S.	170-180	N.S.	YES	100	S.	D.
WYO.	N.S.	110-120	2	170	N.S.	YES	100	S.	D.

On the federal level, some states have a general blanket law like that of California[5] which adequately covers the sanitizing of utensils used in public eating establishments. This type of law is flexible in that local authorities can, if they deem it desirable, impose laws more stringent than those of the state; in no case can the laws imposed by local authorities be less inclusive than those of the state.

The ultimate in control, or at least a start for more nearly perfect control, will in all probability come through individual federal governments, such as the standard code adopted as a guide in the United States.[36] This guide is being used in many places in Canada and in several states of the United States as the law itself. Though it is perhaps far too early to expect such far-reaching controls, the subject has not been taken up in the World Health Organization of the United Nations, nor is there any work on the sanitation of dishes in the present agenda of this group.[35]

SUMMARY OF QUESTIONNAIRE FINDINGS—*Continued*

Prov. or Terr.	*Wash Cycle*		*Rinse Cycle*		*Personnel Health Check-up*	*Equipt. Standards*	*Plate Count*	*Type Law*	*Detg. Spec.*
	Time Min.	*Temp. °F.*	*Time Min.*	*Temp. °F.*					
ALTA.	N.S.	110	2	170	YES	N.S.	100	P.	D.
B.C.	N.S.	110	2	170	N.S.	YES	51	P.	D.
MAN.	N.S.	110	2	170	N.S.	YES	100	L.	D.
N.B.	N.S.	N.S.	3	190-212	N.S.	N.S.	N.S.	P.	N.S.
NFLD.	General regulations of provincial origin								
N.S.	No reply received to questionnaire								
ONT.	N.S.	110	2	170	YES	YES	100	P.	D.
P.E.I.	General regulations of local origin								
QUE.	N.S.	110-120	2	170	N.S.	YES	100	N.S.	D.
SASK.	No reply received to questionnaire								
T.A.	N.S.	110-120	2	170	N.S.	YES	N.S.	T.	D.
T.H.	N.S.	110-120	2	170	N.S.	YES	100	T.	D.
P.R.	N.S.	110-120	2	170	YES	N.S.	N.S.	T.	D.

Country	*Wash Cycle*		*Rinse Cycle*		*Personnel Health Check-up*	*Equipt. Standards*	*Plate Count*	*Type Law*	*Detg. Spec.*
	Time Min.	*Temp. °F.*	*Time Min.*	*Temp. °F.*					
Sweden	No reply received to questionnaire								
England	No regulations yet . . . . under study								
Switzerland	Only general regulations concerning cleanliness								
Norway	Federal regulations of general nature								
Cuba	Regulations under revision								
Brazil	No reply received to questionnaire								
Peru	No reply received to questionnaire								
United Nations	No studies included in present agenda								

N.S.–Not specified; P.—Provincial Law; S.—State Law; L. Local Law; D.—Discretionary; T.—Territorial Law.

2. *Is any specific detergent required or recommended?*

Canada: 100% no
United States: 100% no
Others: 100% no

No health authority has mentioned any specific detergent that is even recommended. Most officials, in the wording of the laws that govern dishwashing, do state that a satisfactory detergent must be used to cleanse the dishes and other utensils. The interpretation of "satisfactory" is left to the discretion of the restaurant owner, but the word is used to imply a product that will meet the specifications of a good detergent as set forth by Tiedeman.[33] These specifications, which are specific as to action and not to type, are as follows: (1) must emulsify food fats; (2) must flocculate other food solids; (3) must wet glass, china, and metal surfaces readily; (4) must function equally well in hard or soft water; (5) must rinse freely.

With such specifications as to action only, the manager of a restaurant has a wide variety of detergents from which to choose. This competitive factor is probably one of the reasons why present-day laws do not define the specific detergent that is to be used. Perhaps another reason is that the methods of evaluating detergents are still relatively new and are constantly being changed and improved.

In considering detergents, Strong[30] has suggested that if they are fed to the dishwashing machine automatically, the hydrogen ion concentration of the wash water should be maintained at approximately pH 10.5 by adjusting the rate of feed. This hydrogen ion concentration has been substantiated by Hutchinson[11] as being the most effective when it was shown that wash waters with hydrogen ion concentrations of pH 7.0 to pH 10.6 contained up to 1,000,000 organisms per milliliter. Also, in this pH range, 67 per cent of the wash waters contained coliform organisms to the extent of 1,800 organisms per ml. of water. In contrast, when the pH range was over pH 10.0, only 35 per cent of the wash waters contained organisms in excess of 1,000,000 per ml., and only 47 per cent had coliform organisms present to the extent of 1,800 per ml.

3. *Is the health of the personnel involved taken into consideration, and, if so, in what manner?*

Canada:	37.5% yes, 62.5% not specified
United States:	36.1% yes, 5.6% no, 58.3% not specified
Others:	22.2% yes, 11.2% no, 66.6% not specified

Most of the regulations governing the operation of public eating establishments have clauses that deal with personnel sanitation in a general way. For example, the municipal code of Wilmington, Delaware,[7] states:

> All employees shall wear clean outer garments and shall keep their hands clean at all times while engaged in handling of food, drink, utensils, or equipment. Employees shall not expectorate or use tobacco in any form, including smoking, in rooms in which food is manufactured or prepared. Hair nets shall be worn by female employees. Suitable head-dress shall be worn by chefs, male and female.

Fuchs[9] has stated that the examination of employees by private physicians cannot be relied upon and that the cost of such examinations is prohibitive to the public health services. However, in some cities like Indianapolis, Indiana,[12] the health clause of the municipal code requires a physical examination once every six months to insure freedom from any infectious or transmittable disease.

with a blood test for syphilis once a year. It is this latter type of regulation that comprises the percentages in the 'yes' column of the questionnaire.

As for the prohibition of the use of tobacco by personnel on duty in restaurants, the code of Kentucky[14] gives the following as the reason:

> The use of tobacco tends to promote careless food-handling methods and may promote spitting and the contamination of the fingers and hands by saliva.

Alaska[1] under its laws provides for the exclusion of an infected person from any restaurant, the examination of the employee and his associates, and, if necessary, the closure of the restaurant until all danger of a disease outbreak has been eliminated. Others, like Houston, Texas,[32] go so far as to impose a fine of $200 for failure to comply with their regulations, including the health clause. This fine is cumulative on a per diem basis until compliance has taken place.

Baltimore, Maryland,[18] has instituted a swab-rinse technique of the employees' hands to determine how thoroughly hands are washed after toilet use. Results to date have been reported as very good.

4. *What are the **minimum requirements** for equipment?*

Canada:	50% have requirements, 50% none
United States:	88.8% have requirements, 11.2% none
Others:	22.2% have requirements, 77.8% none

Most of the cities polled have general regulations for equipment comparable to those expressed in the state code of Arkansas[3] which says that equipment must be made of seamless or non-absorbable material, easily cleansed, and that the equipment shall be used for no other purpose than that for which it was originally intended. It further states that the use of cracked dishes or chipped utensils and tarnished silverware is forbidden.

Still others, like Atlanta, Georgia,[10] go so far as to regulate the spacing of equipment, particularly the dishwashing machine, with regard to the distance from walls and the height off the floor. Perhaps the ultimate in an attempt to produce nearly perfect results from mechanical dishwashing was reached by the Committee on Sanitary Engineering and Environment of the National Research Council at Washington, D.C., when it set forth a series of specifications for equipment, installation, and the operation of mechanical dishwashing machines.[24]

5. *What is the **maximum plate count allowable** to determine the degree of satisfactoriness of the method under investigation?*

Canada:	62.5% using a count of 100, 37.5% not using counts
United States:	61.1% using a count of 100, 38.9% not using counts
Others:	11.1% using a count of 100, 88.9% not using counts

A plate count under 100 colonies per utensil seems to be the generally accepted basis of satisfactory results. Concord, New Hampshire,[26] uses a graded count that is in general agreement with the count established by Macdonald and Freeborn,[15] which is shown for comparison in parentheses.

1 to 25, excellent (below 10, excellent)
25 to 50, very good (below 50, good)
50 to 100, passable (between 50 and 100, poor)
above 100, unsatisfactory (over 100, unsatisfactory)

Some cities, among them Boston, Massachusetts,[19] test routinely for the presence of *E. coli* in all specimens submitted to the laboratory, but the significance of the presence of *E. coli* on the washed dishes and in the wash waters is not quite clear.

On the subject of plate counts, any number assigned to designate satisfactory dishwashing is purely arbitrary. This brings up the point whether sterility is to be desired in such operations as public dishwashing by mechanical methods. It would surely be the safest criterion; but, on the other hand, it would be most difficult to obtain this point of perfection. Absolute sterility would involve too many changes in equipment, and in some cases it would be too expensive to make the changes commercially feasible. Also, until health authorities and persons in charge of public eating and drinking establishments can be thoroughly convinced of the value of proper cleansing and sanitizing of dishes and utensils, it would be practically useless to approach them with the thought of trying to obtain surgical sterility in the dishwashing operations. Surgical sterility has been obtained in dishwashing by mechanical means,[20] but under quite uncommon circumstances aboard a ship. It has also been considered from the standpoint of the public eating place.[34] But pathogen survival under the most modern regulations of sanitizing has been reduced to a minimum, and for all practical purposes the ultimate of surgical sterility can be dismissed for the present time.

6. *What are the times and temperatures of the wash and rinse cycles?*

The answers to this question are so varied that it is impractical to subject them to a percentage analysis. Of the cities polled, none permitted a temperature for the wash water under 110°F., with the upper limit being 120°F. for dishes washed by hand; for the mechanical counterpart, the lower limit was again generally 110°F., with a generally accepted upper limit of 140°F. The temperature of 140°F. seems to be the maximum that should ever be used, for at temperatures in excess of this, materials cook to the surface of utensils,[2] thereby giving an appearance of uncleanliness even though they may be acceptable from the bacteriological plate-count standpoint. However, a wash of forty seconds at a temperature of 165°F. has been suggested by Cox[8] and a pre-rinse at 212°F. by McDaniel.[20]

Lengths of time for the wash period were even more varied than the temperatures of this cycle. They ranged from "an appearance of cleanliness"[17] for hand-washed dishes to periods of from eight to forty seconds[22-24] for machine-washed dishes.

The time and temperature of the rinse cycle varied from fifteen seconds at 170°F. at Richmond, Virginia,[37] to fifteen seconds at 180°F. in Providence, Rhode Island.[29] A majority of the cities used a rinse of 170° F. for a period of

two minutes. This was even applied to dishes washed by hand and machine in some cities, such as Toronto, Ontario.[27]

The hot-water method of disinfecting cleansed eating utensils is not the only one that is acceptable to health authorities. California[5] lists approved quaternary ammonium compounds that may be used instead of hot water. In fact, most cities give at least one alternate method, which usually involves a chlorine or quaternary ammonium compound.

To summarize these six questions, the following points may be used as a guide for cleansing and sanitizing dishes, whether they are washed by hand or by mechanical means:

Time of the wash cycle:

Until visibly clean if washed by hand, and a minimum of twenty seconds[24] if washed by machine.

Temperature of the wash water:

Not less than 110°F. if washed by hand, and preferably not less than 120°F. if washed by machine (with higher temperatures up to 140°F. without a thorough pre-rinse, and up to 160°F. with a pre-rinse).

Time of rinse cycle:

For both manually and machine-washed dishes, an absolute minimum of fifteen second but preferably two minutes (depending upon the equipment and method of operation).

Temperature of the rinse cycle:

For the minimum time stated, the temperature should be in excess of 170°F. in order to assure complete killing of pathogens, but if the temperature is maintained at 170°F. the longer period of rinsing should be used. No rinse should ever be below 170°F.

Detergent:

Any detergent that is satisfactory for the water that is being used, i.e. one that will give satisfactory cleaning without undue residue. It should by all means be fed to the dishwashing machine automatically to insure a constant amount at all times.

Plate count:

A maximum of 100 colonies per utensil can be considered a "safe" figure, provided the time and the temperature of the rinse cycle are such that only the occasional pathogen will survive the wash and rinse operations. If the conditions of the washing and rinsing are not up to satisfactory levels, the resulting plate count should be analysed before allowing the continuance of the method in use.

In conclusion, one more factor should be mentioned, the general cleanliness of the eating place. It would be absurd to have a machine remove bacteria from eating utensils and then leave them open to contamination from other sources in the eating establishment.

All the health codes reviewed in this survey made mention of the general cleanliness of the place of business that involved the public sale and serving of food. St. Louis, Missouri,[23] has a grading system, as do other cities, the results of which must be posted in a conspicuous place in the establishment for the public to see. This grading system embraces the general cleanliness as well as the bacterial cleanliness of the surroundings and utensils. Grading is usually based on at least the following points and in some instances many more: cleanliness of walls and floors, adequate water supply, adequate garbage disposal, freedom from infestation by rodents and insects, adequate and clean toilet facilities for personnel, and proper ventilation. To this list of conditions, Iowa[13] has added a clause that prohibits the use of any room remotely connected with food to be used as a place for sleeping. The government of Switzerland provides for the temporary and even permanent closure of places that sell or manufacture food if they fail to comply with general sanitation rules.[31]

To illustrate the extent to which these general rules are applied, the following sections of health codes are quoted. These sections, although applying to rules in most sanitary codes pertaining to public eating establishments, were chosen because of their exacting coverage of the rule in question.

Floors:

"The floors of all rooms in which food or drink is stored, prepared or served or in which utensils are washed shall be of such construction as to be easily cleaned, shall be smooth, and shall be kept clean and in good repair."[16]

Walls and ceilings:

"All walls and ceilings of rooms in which food or drink is stored or prepared shall be finished in light color. The walls of all rooms in which food or drink is prepared or utensils are washed shall have a smooth, washable surface up to the level reached by splash or spray."[28]

Water supply:

"Running water under pressure shall be easily accessible to all rooms in which food is prepared or utensils are washed, and the water supply shall be adequate and of safe sanitary quality."[8]

Adequate garbage disposal:

"Every restaurant shall be equipped with covered metallic containers for receiving and keeping in a sanitary condition all garbage and waste. Every container shall be kept in such a place and manner as shall preclude odours and other nuisance in the restaurant, and all garbage and waste shall be removed from the restaurant and its premises at least once in every twenty-four hours."[25]

Freedom from rats and insects:

"Buildings must be free from contaminated surroundings and vermin-proof."[21]

Toilet facilities:

"Clean and adequate toilet facilities must be provided for both sexes. Toilet rooms and compartments shall be adequately lighted and properly ventilated. Doors shall be self-closing and shall not open directly into a kitchen or storage room."[3]

Ventilation:

"Every eating and drinking place shall be sufficiently well ventilated to prevent the accumulation of disagreeable odours and condensation. The medical health officer, if he deems it necessary, may require:

"A. The window area of all rooms shall be equivalent to at least 1/10 of the floor area. Windows fitted to open shall be equivalent to at least 5 per cent of the floor area.

"B. The installation of mechanical apparatus to provide: (1) eight complete changes of air per hour in rooms in which food or drink is prepared or utensils washed; (2) four complete changes of air in all other rooms.

"C. Canopies of metal or other approved material to be installed over stoves and directly connected to the outside air."[4]

Summary

A general review of health regulations pertaining to dishwashing methods used in public eating and drinking establishments has been presented. Specific examples of the various components of the regulations have been cited for clarification of the point in question.

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Soluble Protective Antigen of Salmonella Typhosa*

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TOPLEY and associates[1] have shown that a soluble antigen of *S. typhosa* can be prepared by precipitating a suspension of living cells with acetone, digesting the acetone-extracted cells with trypsin and fractionating the digested product with alcohol. Wakeman[2] reported substantially the same findings.

Work was first undertaken for the purpose of re-investigating the effect of the enzyme trypsin on an aqueous suspension of *S. typhosa*, both with a view to obtaining a soluble antigen and to studying the effect of trypsin on antigenicity.

Change in optical appearance of the suspension was taken as a first criterion of enzyme activity. By this criterion living cells are not affected by the enzyme and hence it was necessary to apply some method of killing before digestion was attempted.

To this end a suspension of *S. typhosa* (Rawlings rejuvenated strain) was prepared just as for typhoid vaccine. An 18-hour surface growth of *S. typhosa* on agar was washed off with physiological saline and the resulting suspension was heated at 56°C. for one hour. Trypsin was added to some of the suspension and the mixture incubated at 40°C. There was no detectable optical change in the suspension. A second lot of suspension was prepared which was inactivated at 63°C. instead of at 56°C. When this suspension was incubated with trypsin at 40°C. there was evidence of digestion as shown by a change in opacity from dense to almost water-clear. The effect of such treatment on antigenicity was examined.

In this test for antigenicity and in all subsequent tests 0.5 ml. amounts of materials to be tested were injected into the leg muscle of mice and three weeks later an estimated 1000 ALD of living *S. typhosa* suspended in 5 per cent mucin was injected intraperitoneally into each mouse.

With this antigenic test and with each subsequent antigenic test there was set up a control test on the lethal effect on normal mice of different dilutions of the challenge culture of *S. typhosa* in 5 per cent mucin. Results of these normal control tests are summarized in Table I.

An experiment was then set up to examine quantitatively the effect of trypsin on the antigenicity of *S. typhosa*.

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TABLE I

INTRAPERITONEAL INJECTION INTO NORMAL MICE OF A LIVING CULTURE OF S. TYPHOSA SUSPENDED IN 5% MUCIN

Estimated dose in a.l.d.	No. of Mice Injected	No. of Mice Dead	No. of Mice Living	% Survival
0.1	76	6	70	90
1.0	76	31	45	59
10	76	58	18	24
100	76	72	4	5
1000	76	76	0	0

The details of the preparation of material for this experiment are shown schematically below.

Living suspension of *S. typhosa*

Heated at 63°C. for 1 hour

(Heated suspension, whole vaccine)

Heated suspension digested with trypsin, 1 Anson unit/ml. at 40°C. for one hour

Centrifuged

(supernatant unfiltered)

(supernatant Seitz-filtered)

The fractions marked in parentheses were tested for antigenicity, with the results shown in Table II. It is clear from these results that a Seitz-filtered solution of the protective antigen of *S. typhosa* may be obtained and that such antigen is not appreciably destroyed by digestion with trypsin.

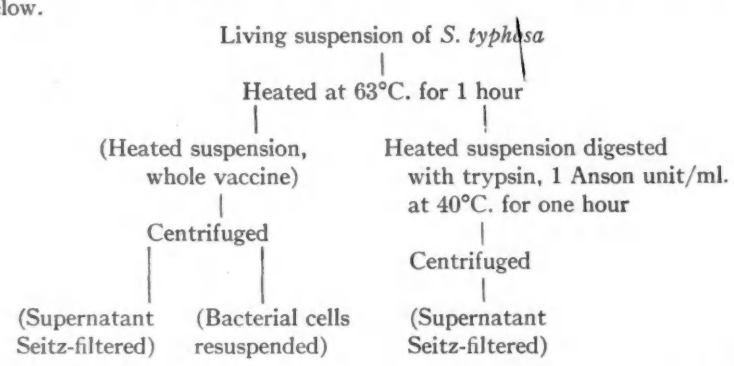
It was then decided to see whether a soluble antigen was present in fractions other than those which had been subjected to treatment with trypsin.

TABLE II

ANTIGENICITY OF TYPHOID VACCINE AFTER DIGESTION WITH TRYPSIN

Dilution of Antigen	Survivals in each group of mice after an estimated challenge dose of 1000 a.l.d. of *S. typhosa*		
	Whole Vaccine	Digested Vaccine (unfiltered)	Digested Vaccine (filtered)
Undil.	10/10	9/9	9/9
1:10	7/8	10/10	8/9
1:100	1/10	1/10	0/10
1:1000	0/10	0/10	0/10

The outline of an experiment designed to investigate this question is shown below.


Living suspension of S. typhosa
Heated at 63°C. for 1 hour
(Heated suspension, whole vaccine)
Centrifuged
(Supernatant Seitz-filtered)
(Bacterial cells resuspended)
Heated suspension digested with trypsin, 1 Anson unit/ml. at 40°C. for one hour
Centrifuged
(Supernatant Seitz-filtered)

Here again the fractions shown in parentheses were tested for antigenicity, with the results recorded in Table III. These results show that the supernatant from a suspension of *S. typhosa* heated at 63°C. without prior digestion with trypsin is substantially as good antigenically as the whole culture; and that very little antigenicity is associated with the heated bacterial cells.

TABLE III

COMPARISON OF THE ANTIGENICITY OF PREPARATIONS FROM TYPHOID VACCINE

Dilution of Antigen	Survivals in each group of mice after an estimated challenge dose of 1000 a.l.d. of *S. typhosa*			
	Whole Vaccine	Supernatant from Whole Vaccine (filtered)	Bacterial Cells from Whole Vaccine (resuspended)	Whole Vaccine Digested and Filtered
Undil.	9/9	10/10	10/10	10/10
1:5	10/10	10/10	8/10	9/9
1:25	6/9	6/10	0/10	5/9
1:125	5/10	4/10	0/10	3/10
1:625	0/10	0/10	0/10	0/10

It was of interest to find out whether the soluble protective antigen of *S. typhosa* was present in a suspension of unheated cells. This question was investigated by Seitz-filtering a suspension of unheated cells and testing the antigenicity of the filtrate. It was found that only a small proportion of soluble antigen was present in such filtrate, whereas, as indicated above, the filtrate of cells heated at 63°C. contained substantially all the antigen of the whole suspension.

It was found further that soluble antigen was also released from a suspension of *S. typhosa* when the suspension was heated at 56°C. for one hour.

Preliminary investigations of certain properties of the soluble antigen of *S. typhosa* released by heating at 56°C. or at 63°C. have been carried out, with the following results:

1. The antigen can be adsorbed on aluminium phosphate.
2. The antigen can be precipitated from solution by ammonium sulphate. Such precipitated antigen is water-soluble and is retained by a Cellophane dialyzing membrane.
3. The serum of rabbits hyperimmunized with the soluble antigen will passively protect mice against living *S. typhosa*.
4. Typical flocculation phenomenon occurs in mixtures of soluble antigen of *S. typhosa* and immune rabbit serum.

Further investigation of these and other properties of the soluble antigen of *S. typhosa* is being carried out.

Summary

A suspension of *S. typhosa* which has been heated for 1 hour either at 56°C. or at 63°C. contains a soluble Seitz-filtrable antigen which will protect mice against living *S. typhosa*. Substantially all the protective antigen in such killed suspensions is present in soluble form.

Digestion of whole culture of *S. typhosa* inactivated at 63°C. does not increase the amount of soluble protective antigen, neither does it bring about any significant loss.

Preliminary observations on certain other properties of the soluble antigen of *S. typhosa* have been enumerated.

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PROGRESS IN POLIOMYELITIS

DURING the first week in September 1951, there was held in the University of Copenhagen the Second International Poliomyelitis Conference. This conference, sponsored jointly by the Danish authorities and the National Foundation for Infantile Paralysis, New York, was attended by several hundred physicians from all parts of the world, including some from Canada. It may be of interest to workers in the field of public health in Canada to learn something of work that was presented at this conference, more particularly in relation to future possibilities in the prevention of the disease by means of biological products.

Early in the conference, attention was focussed on diagnostic problems in poliomyelitis. Doctor J. E. Smadel of the Army Medical School, Washington, D.C., spoke of the need for detailed laboratory tests in cases of the non-paralytic form of the disease, stressing that infections with the viruses of mumps and herpes might be mistaken for poliomyelitis. Doctor Smadel also warned workers on the North American Continent to think of leptospirosis as a cause of the aseptic meningitis syndrome. Doctor G. Dalldorf of the New York State Laboratories and Doctor E. C. Curnen of the Yale Poliomyelitis Research Group reviewed the state of knowledge of the Coxsackie group of viruses. They pointed out that the two viruses are frequently found together, even in a single patient, and that epidemics of poliomyelitis are often actually mixed epidemics of poliomyelitis and Coxsackie infections. This has been the experience in Canada, as was reported by Doctor A. J. Rhodes. The reports of the Toronto group will be familiar to readers of this *Journal*. Doctor Dalldorf reported experiments in which it was shown that the inoculation of Coxsackie virus in mice interfered to some extent with the progress of infection with Lansing poliomyelitis virus. Whether any such interference between the two viruses occurs in the human population is not known. It does not appear likely at the moment that use can be made of the Coxsackie virus, for example in the form of a vaccine, in an attempt to prevent poliomyelitis in man.

The paper that aroused most interest at the conference was given by Doctor John Enders of Boston, who presented a review of the important work that his group has carried out in cultivating the poliomyelitis virus *in vitro*. He

reported that all three antigenic types of poliomyelitis virus could be grown in tissue culture. The medium used for most of the studies consisted of a substrate of human cells suspended in a balanced salt solution. The cells were derived from human embryos, uterus, or thyroid. The essential novelty of Doctor Enders' technique consists in the fact that the cells in the medium are allowed to remain in the flasks for about 28 days, the nutrient fluid being changed every 3-5 days. In infected cultures, virus and cell substrate are thus in contact for a prolonged period. Virus is liberated into the fluid part of the culture and can be demonstrated by the inoculation of mice or monkeys.

There are many important applications of the tissue culture technique, for example in the isolation and titration of viruses, the typing of viruses, the measurement of antibody, and the production of virus for vaccination. It is now possible to obtain a virtually cell-free fluid containing poliomyelitis virus and without any non-human antigen. Such a material has obvious possibilities from the viewpoint of vaccination. Preliminary studies indicate that infected tissue culture fluid is an effective antigen in mice as well as monkeys. Before such a material could be considered for human use, it would be necessary to demonstrate antigenicity after treatment with chemicals or ultraviolet light. Unfortunately, killed poliomyelitis virus is not a potent antigen. It is possible, however, that as strains of poliomyelitis virus are carried in tissue culture, a mutant form may appear. If such a strain has the general properties of other mutants, for example the 17D strain widely used in the prophylaxis of yellow fever, it might be expected to lack the characteristic virulence of poliomyelitis virus while maintaining antigenicity. It will readily be understood why work is actively being pursued in various laboratories on the problems of preparing vaccines from tissue cultures. Such vaccines will have to be rigorously tested in animals, especially monkeys, before any question of human use can be considered. It will be of interest to Canadian readers to know that studies on cultivation of poliomyelitis viruses have been carried out in the Connaught Medical Research Laboratories and the Hospital for Sick Children, Toronto, for over a year, with encouraging results.

Feelings of optimism that were raised by the reports of work on tissue culture were perhaps to some extent offset on hearing the review of Doctor Bradford Hill of the London School of Hygiene, on the role of inoculations in precipitating poliomyelitis. Doctor Hill outlined the case for concluding that in 1949 in England and Wales, as well as Australia, an association had been demonstrated in some children between a recent prophylactic inoculation and the development of poliomyelitis, with paralysis of the limb last inoculated. Doctor Hill indicated that at the moment the degree of this risk was unknown, but that a study was now in progress in England which it was hoped would yield this information. No evidence was brought forward by speakers from America that a similar correlation has been observed here, although readers of this journal will probably be familiar with recent papers on this subject by Doctor Gaylord Anderson. Clearly, further investigation of this problem is required.

A paper which served to emphasize another possible difficulty in introducing a vaccination program was presented by Doctor Jonas Salk of Pittsburgh on

behalf of a group of United States investigators. It was reported that 100 strains of poliomyelitis virus, isolated in many parts of the world, including Canada, had now been typed in monkeys and that 85 fell into one type ("Brunhilde"), 12 into a second type ("Lansing"), and 3 into a third (Leon). It appears therefore that any vaccine would require to be trivalent, and this of course increases the difficulties of manufacture.

Thought along another line of approach to the control of poliomyelitis was directed by Doctor Howard Howe of Baltimore. Doctor Howe, in reviewing the well-known work on vaccination of monkeys carried out by his associates, stressed the important role of specific antibody in determining resistance to infection. From this work, and from newer studies published by Doctor David Bodian on the protective role of antibody in monkeys, and by the Toronto group using mice, it appears logical to press for a field trial of poliomyelitis antibody in the prevention of the disease during times of epidemic. A ready source of antibody is available, as it is known that human gamma globulin used in the prevention of measles is rich in antibody to the 3 types of poliomyelitis virus. Studies at present being carried out in the Hospital for Sick Children, Toronto, indicate that poliomyelitis antibody may be detected in the serum of children for some weeks after an intramuscular inoculation of gamma globulin.

To summarize the present position in regard to the possible future control of poliomyelitis by means of specific biological agents, it would seem likely that a vaccine will before very long be developed from tissue cultures. Such a vaccine could be used in a long-term program of prevention, and immune globulin might be considered for short-term prevention in the face of an outbreak.

Finally, it must be realized that there are great difficulties in the way of translating laboratory advances into every-day public health practice, and that successes achieved with experimental animals may not necessarily be confirmed in man. Nevertheless, it may be soberly concluded that the future is full of promise.

NINETEENTH ANNUAL CHRISTMAS MEETING

LABORATORY SECTION

CANADIAN PUBLIC HEALTH ASSOCIATION

ROYAL YORK HOTEL, TORONTO

December 17 - 18, 1951

MONDAY MORNING, DECEMBER 17th

9.00 a.m.

REGISTRATION. A fee of $2.00 is charged to cover in part the expenses of the meeting.

Private Dining Rooms 1 - 3, 9.20 a.m.

Presiding: Professor R. G. E. Murray, Department of Bacteriology and Immunology, Faculty of Medicine, University of Western Ontario, London.

N.B.: Speakers will be held strictly to the time allotted.

9.20 a.m.

THE ISOLATION AND TESTING OF BACTERIOPHAGES FOR C. DIPHTHERIAE.

J. Fahey, Department of Hygiene and Preventive Medicine, University of Toronto.

9.40 a.m.

KODACHROME RECORD OF SOME INTERESTING FINDINGS DURING 1951 IN A PUBLIC HEALTH LABORATORY SERVICE (ONTARIO).

10.00 a.m.

REPORT ON TWO CASES OF LEISHMANIASIS IN CHILDREN.

T. E. Roy, N. M. Wrong and W. L. Donohue, Departments of Bacteriology, Dermatology and Pathology, Hospital for Sick Children, Toronto.

10.20 a.m.

REVIEW OF A PUBLIC HEALTH MYCOLOGY SERVICE.

J. Fischer, Division of Laboratories, Department of Health of Ontario, Toronto.

10.40 a.m.

ANIMALS AS SOURCES OF INFECTION FOR SUPERFICIAL DERMATOMYCOSES.

F. Blank, Department of Bacteriology and Immunology, McGill University, Montreal.

11.00 a.m.

ACTION OF YOUNG CULTURE FILTRATES OF S. TYPHOSA ON THE EXPERIMENTAL INFECTION PRODUCED WITH WASHED CELLS OF THE SAME MICROORGANISM.

A. Frappier, L. Sherman-Warczewski and S. Sonea, Institute of Microbiology and Hygiene, University of Montreal, Montreal.

Private Dining Rooms 1 - 3, 11.20 a.m.

BUSINESS SESSION

MONDAY, 2.00 P.M.

Private Dining Rooms 1 - 3

2.00 p.m.

THE INCIDENCE OF TRICHINOSIS IN SWINE IN THE MARITIME PROVINCES.

J. F. Frank, Division of Animal Pathology, Science Service, Department of Agriculture, Branch Laboratory Maritime Area, Sackville, N.B.

2.20 p.m.

SOLUBLE PROTECTIVE ANTIGEN OF SALMONELLA TYPHOSA.

G. G. Waters and P. J. Moloney, Connaught Medical Research Laboratories, University of Toronto.

2.40 p.m.

A PRELIMINARY REPORT ON A STUDY OF PIGMENTED MYCOBACTERIA.

F. Prissick and A. M. Masson, Children's Memorial Hospital and Department of Bacteriology and Immunology, McGill University, Montreal.

3.00 p.m.

AN APPRAISAL OF THE SAFETY OF VARIOUS CANADIAN SOFT-CURD CHEESES MADE FROM UNPASTEURIZED MILK.

F. S. Thatcher and C. J. Coutu, Microbiology Section of the Food and Drug Laboratories, Department of National Health and Welfare, Ottawa.

3.20 p.m.

VACCINATION OF GUINEA PIGS WITH WATER-OIL EMULSIONS AND SALINE SUSPENSIONS OF KILLED BRUCELLA ABORTUS.

Ronald Gwatkin and Lucija Dzenis, Division of Animal Pathology, Department of Agriculture, Animal Diseases Research Institute, Hull.

3.40 p.m.

SOME OBSERVATIONS ON BACTERIAL RESISTANCE TO ANTIBIOTICS.

A. M. Miller and F. H. Sherlock-Hubbard, Division of Laboratories, Department of Health of Ontario, Toronto.

4.00 p.m.

A SIMPLIFIED METHOD FOR THE PURIFICATION OF ANTITOXINS.

J. deRepentigny, A. Borduas, L. Forté and P. Marois, Institute of Microbiology and Hygiene, University of Montreal.

4.20 p.m.

A SPECIFIC APPROACH TO THE SERODIAGNOSIS OF SYPHILIS.

Robert A. Nelson, Jr., Naval Medical Research Institute, Bethesda, Maryland, U.S.A.

MONDAY, 7.00 p.m.

ANNUAL DINNER

Private Dining Room No. 10

Tickets ($3.00, gratuity included) will be on sale at the Registration Desk.

Presiding: Professor R. G. E. Murray, Department of Bacteriology and Immunology, Faculty of Medicine, University of Western Ontario.

Address: Bacteriological Safety Devices.

Dr. A. G. Wedum, Chief, Safety Division, Chemical Corps Biological Laboratories, Camp Detrick, Frederick, Maryland, U.S.A.

TUESDAY MORNING, DECEMBER 18th

Private Dining Rooms 1 - 3

9.20 a.m.

Antigenic Typing of Coxsackie Viruses Isolated in Ontario, 1949-50.

A. J. Rhodes, Eina M. Clark, Dorothy S. Knowles and Frank T. Shimada, Connaught Medical Research Laboratories, University of Toronto.

9.40 a.m.

The Serological Pattern of the 1950-51 Influenza Strains in Canada.

George Dempster and B. K. Buchner, Connaught Medical Research Laboratories, University of Toronto.

10.00 a.m.

Human Infection by the Virus of Newcastle Disease.

C. A. Mitchell, Department of Agriculture, Animal Diseases Research Institute, Hull.

10.20 a.m.

Polarography as a Possible Aid in the Laboratory Diagnosis of Poliomyelitis.

J. Palowski, L. Morrissey, and N. Labzoffsky, Division of Laboratories, Department of Health of Ontario, Toronto.

10.40 a.m.

Mumps Infectivity Studies in Hamsters.

Muriel Burr and F. P. Nagler, Laboratory of Hygiene, Department of National Health and Welfare, Ottawa, Ontario.

11.00 a.m.

Failure of the Haemagglutination Test to Differentiate Between Types of Tuberculin.

Paul Boulanger and Herman Konst, Division of Animal Pathology, Dominion Department of Agriculture, Animal Diseases Research Institute, Hull.

11.20 a.m.

Clostridium Botulinum, Type E.

C. E. Dolman and Helen Chang, Connaught Medical Research Laboratories (Western Division), and Department of Bacteriology and Immunology, University of British Columbia, Vancouver.

11.40 a.m.

Lignin Reaction and Antituberculous Activity of Pas and Derivatives.

C. O. Siebenmann and A. Zubrys, Connaught Medical Research Laboratories, University of Toronto.

TUESDAY AFTERNOON

2.30 - 5.00 p.m. Visit to Central Laboratory, Department of Health of Ontario, 360 Christie Street, Toronto.

NEWS

British Columbia

DR. BRIAN HOLMES, a graduate of Edinburgh University, has recently joined the staff of the Health Branch of the Department of Health and Welfare. Dr. Holmes will assume the directorship of the North Fraser Valley Health Unit, at Mission, succeeding Dr. A. A. Larsen who is presently at the School of Hygiene, University of Toronto.

DURING OCTOBER a three-day meeting of all dental health officers in the Province was held in Victoria under the chairmanship of Dr. J. A. Taylor, Deputy Provincial Health Officer. Subjects on the agenda included the role of the dental profession in civil defence, evaluation of dental health education materials, and nutrition education.

EARLY IN NOVEMBER Dr. R. D. Defries, Director of the School of Hygiene and Connaught Medical Research Laboratories, University of Toronto, visited the Department. During his stay he addressed a meeting of the senior staff.

A COURSE in the Nursing Aspects of A.B.C. Warfare will be offered by the Department of National Health and Welfare to a group of selected nurses in British Columbia early in December. This course is to be given in cooperation with the Provincial Department of Health, the office of the Provincial Civil Defence Co-ordinator and the Registered Nurses' Association. Its purpose is to provide a nucleus of trained instructors who will be in a position to teach all graduate nurses in their own communities and districts in the nursing aspects of modern warfare and civilian defence. The four-day course will be held in Vancouver at the Christmas Seal Auditorium. It will be given by a team comprised of two Canadian nurses, Miss Esther Robertson and Miss Mildred Walker; a physician, Dr. Gordon Fryer; and a physicist, Mr. Peter Bird. Miss Evelyn Pepper, Nursing Consultant, Department of National Health and Welfare, will be in charge of the course. It is expected that almost sixty nurses will attend.

Manitoba

PLANS FOR THE 1952 CONVENTION of the Canadian Public Health Association were outlined at an October meeting called by the president, Dr. M. R. Elliott of Winnipeg. The convention will be held in Winnipeg at the Fort Garry Hotel on June 16 to 18, with sessions of the Executive Council on June 15. Committees have been appointed to handle details of program planning, finance, publicity, entertainment, registration, hotel accommodation, and exhibits.

L. A. KAY, public health engineer, has returned to the Division of Environmental Sanitation, Manitoba Department of Health and Public Welfare, after leave of absence for service with the Armed Forces. During this time Mr. Kay has been associated with the directorate of works and accommodations, Army Headquarters, Ottawa.

A. GRANT MCLEOD, food technologist, has been appointed to the Bureau of Food Control as milk consultant. Mr. McLeod is a graduate of the University of Manitoba and has been associated with the Dairy Branch of the Department of Agriculture for the past two years.

LEWIS HUNTER, former sanitary inspector with the St. James–St. Vital–Fort Garry Health Unit, has rejoined the Manitoba Department of Health and Public Welfare. Mr. Hunter has been posted to the office of the Winnipeg District Sanitary Inspector.

GRADUATION EXERCISES for thirty students of the Manitoba Central School for Practical Nurses were held in Winnipeg in October. B. F. Addy, principal of Manitoba Technical Institute, where the nursing students attend classes, was chairman of the program. After a one-year course the practical nurses are licensed to work in provincial hospitals or on private cases.

DR. E. C. CHAMBERLAYNE, director of the Bureau of Food Control, Department of Health and Public Welfare, has been awarded certification as a fellow of the American

Board of Veterinary Public Health. He is the second Canadian to receive this honour.

K. G. McQUARRIE, sanitary inspector with the Division of Environmental Sanitation, has been granted leave of absence to take a one-semester course at the School of Hygiene, University of California.

Quebec

QUEBEC'S SIXTY-SEVENTH HEALTH UNIT, a new unit for Jacques Cartier County, will be opened sometime next spring. It will serve the western end of Montreal Island from Ste. Anne de Bellevue to the Town of Mount Royal, and from LaSalle to St. Raphael de l'Isle Bizard—a population of about ninety thousand. When fully organized, the unit will provide all public health services, including pre-natal and well-baby clinics and immunization programs. A dental health program will be established for the prevention of dental illnesses and the detection and correction of existing dental defects. A service will be set up for the control of tuberculosis, particularly through the use of BCG vaccine. An inspection service will safeguard water and food supplies. Attention will be given to health education among children as well as adults, to stimulate interest in health and to decrease the incidence of preventable illnesses.

The full staff will consist of thirty-seven employees, some on a part-time basis. It will include four doctors with training in public health, twenty-three public health nurses, two sanitary inspectors, two dental hygienists, a dental technician, and three members specializing in tuberculosis control.

The cost of the new health service is estimated at $90,000 a year. Approximately half will be paid from the Federal Health Grants and the remainder by the Provincial Government and the municipalities concerned.

New Brunswick

A LARGE EXPANSION PPOGRAM now nearing completion at Jordan Memorial Sanatorium, River Glade, was inspected late in October by nearly three dozen physicians who attended a one-day clinic at the institution. The doctors and other officials on hand are active in diagnosis and treatment of tuberculosis in New Brunswick. Three Prince Edward Island representatives in tuberculosis work were also present. The medical superintendent of the sanatorium, Dr. C. W. Kelly, welcomed the group and participated in the discussions. Five speakers were heard on such topics as Saranac treatment methods, streptomycin drug resistance, advances in the treatment of tuberculous meningitis, orthopædic care and physiotherapy in thoracoplasty cases. New buildings and additional facilities still under construction were visited.

A PAMPHLET entitled "Health Services in New Brunswick", depicting the work that is being carried out at federal, provincial and local levels in the province, has been published by the provincial Department of Health and Social Services. The pamphlet was prepared by Dr. Arthur F. Chaisson of the health department and is designed to accompany and supplement the text currently in use in New Brunswick high schools. The project was actively promoted by Miss Katherine MacLaggan, assistant director of provincial health nursing services, who is in charge of health instruction at Teachers' College in Fredericton.

IT SEEMED IRONIC, but focused public attention on the value of protective measures under health auspices, when three deaths from diphtheria were reported in New Brunswick during National Immunization Week this year. Two were in Edmundston and one in Grand Falls, forty miles south. In addition, there were three other cases in Grand Falls, all of whom recovered. Immunization methods have done much to cause the disease to disappear almost entirely in the province in recent years, but it is of note that immunization clinics had been held recently in the areas concerned, but none of these children had received diptheria toxoid.

Nova Scotia

TWO APPOINTMENTS within the Provincial Department of Health were announced on October 17th by the Honourable Harold Connolly, Minister of Health. Dr. J. Sinclair Robertson was appointed Deputy Minister of Health and Deputy Registrar General, while Dr. G. Graham Simms was appointed to the post of Assistant Deputy Minister left vacant by Dr. Robertson.

Dr. J. Sinclair Robertson, a native of Churchville, Pictou County, graduated from Dalhousie University Medical School with the degrees of M.D., C.M., in 1934. After two years as resident physician at the Nova Scotia Sanatorium, Kentville, he practised for a year at Port Hawkesbury and then

was appointed Divisional Medical Health Officer at Sydney, where he remained for one year. Following that, Dr. Robertson took the course leading to the Diploma in Public Health at the University of Toronto. On his return from Toronto, Dr. Robertson was appointed Divisional Medical Health Officer for the Western Division with headquarters at Yarmouth. In 1947 he was transferred to the Central Office in Halifax and promoted to Assistant Deputy Minister. In 1951 Dr. Robertson received his certification in public health.

Dr. G. Graham Simms, a native of Halifax, graduated from Dalhousie University Medical School with the degrees of M.D., C.M., in 1938. After little more than one year on the staff of the Nova Scotia Sanatorium, he proceeded to the University of Toronto where in 1940 he was awarded the Diploma in Public Health. Dr. Simms was in charge of the Northumberland Division, with headquarters in Pictou, from 1940 to the spring of 1951, when he was transferred to the Central Office. He received his certification in public health this year.

Appointment of Dr. Jean F. Webb

A FORMER DIRECTOR of nutrition services for New Brunswick, Dr. Jean F. Webb, Saint John, has been appointed as a pædiatric consultant on the staff of the Child and Maternal Health Division of the Department of National Health and Welfare. Dr. Webb will assist the director, Dr. Ernest Couture, in planning developments to improve the health of mothers and children and to reduce the infant mortality rate. She will also assist provincial authorities in planning and organizing specific phases of their child and maternal health programs.

Before joining the Department, Dr. Webb spent two and a half years at the School of Public Health of Harvard University, where she was a research fellow for one year and an instructor for one year, as well as serving in the child health division of the Boston Children's Hospital. She has also spent eighteen months in pædiatric training at the Hospital for Sick Children, Toronto. Before going to the United States, she was for three years director of nutrition services for the Department of Health and Social Services of New Brunswick. Dr. Webb was born in Saint John and holds degrees in science from Acadia University, in medicine from McGill University, and in public health from the University of Toronto.